

THE CHEMIST

JUNE 1952



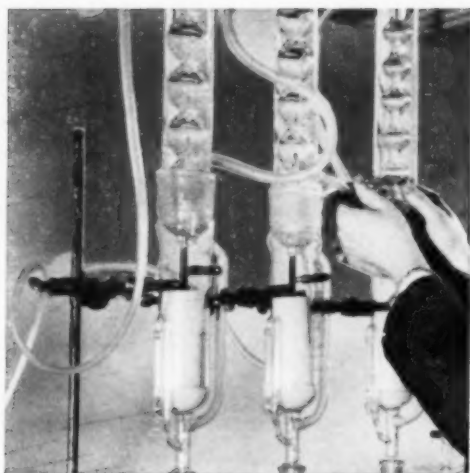
VOLUME XXIX No. 6



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(See Page 249)



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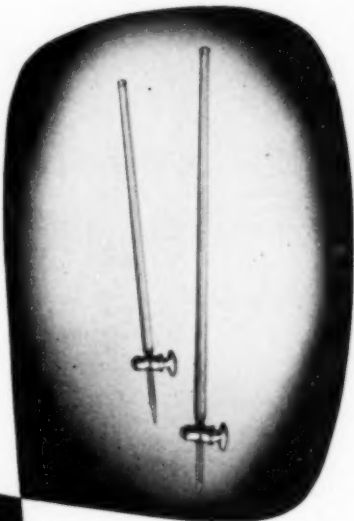
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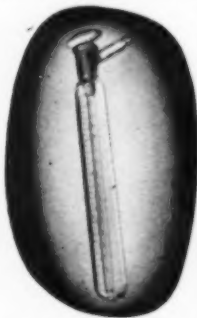
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Proceedings of the Annual Meeting

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New Jersey Chapter Honor Scroll Award to Dr. Frederick A. Hessel, F.A.I.C.

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(Departments omitted from this issue will be included in the
July issue.)

ANNUAL METING PAPERS

The papers presented at the AIC Annual Meeting Sessions entitled, "The Situation in Chemical Literature," "Employer-Employee Relations," "Industrial Safety and Hygiene," and "Chemical Research—Management Viewpoint," will appear in the July and following issues. The papers by Dr. Henry B. Hass and D. H. Killeffer at Session B, "Public Relations for the Chemist," and those by G. V. Taylor and Dr. A. L. Peiker at Session A, "Recent Progress," will appear in July. Also scheduled for July is Dr. Gustaus J. Esselen's paper on "Rewards and Responsibilities," which was presented at the Honor Recipient's Luncheon.



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EDITORIALS

Log Jam in Chemical Literature

*Dr. Donald Price, F.A.I.C., Technical Director, Oakite Products, Inc.,
22 Thames St., New York 6, N.Y.*

THE symposium on chemical literature held at the Annual Meeting of the INSTITUTE, under the chairmanship of Dr. J. W. Perry, focussed attention on a situation of grave concern to every chemist. There can be no progress in chemistry or the chemical industry unless the results of research are published and made available in usable form to other workers. What we call the chemical literature is the life blood of our science. Destroy the chemical literature and you place the chemist or chemical engineer in the position of an amnesia victim. Even the simplest reactions and processes would have to be worked out all over again right from scratch, setting technical progress back many generations. Barring a world-wide catastrophe such a calamity is unlikely, but we are drifting toward a situation scarcely less alarming.

The chemical literature has grown steadily over the years, but it has always been possible for chemists to make literature searches with the expenditure of a reasonable amount of time and effort. Since the war, however, the chemical literature has expanded at such a rate that it will soon become too costly and time-consuming for a chemist to search

the literature with any degree of completeness. Accordingly, chemists will find themselves approaching research problems without an adequate background of what has been done on the problem in the past. Dr. Perry pointed out in his talk that the Annual Index to *Chemical Abstracts* for last year will be about as large as the first Decennial Index. If this rate of growth continues, it is easy to imagine what will happen. In another ten years, the Annual Index may occupy four or five volumes. And we are speaking here only of the abstract literature. Think of the tremendous mass of original literature that the chemist will have to cope with. Such compendia as Beilstein and Gmelin are years behind and there is some question whether or not it is a practicable proposition to bring them up to date.

What to do? Some years ago, a British archbishop suggested a scientific moratorium for ten years to allow mankind to digest the scientific discoveries already made. This would certainly help us to get caught up on our homework, but it is obviously not possible. There is no simple solution to this baffling problem. We all want science to advance, but unless we can find means to harness the vast

outpouring of chemical publications and make them work for us, our science is threatened with being bogged down under the dead weight of its own accumulated products. It is becoming increasingly difficult for a chemist to know any chemistry outside of his own narrow field of specialization. Perhaps we need to develop a class of specialists in generalization to survey and digest whole fields of chemistry and write them up in language intelligible to the non-specialist. Failing some such device, chemists may sooner or later find themselves in the condition of the builders of the tower of Babel. Each little group of specialists will speak a language unintelligible to all the others, and at long last, the work of building the tower of science will come to a halt.

This problem is one that merits the serious consideration of every

chemist, chemical engineer, and industrialist in the chemical field. One thing is certain: We must all give our whole-hearted support to the splendid work that Dr. Crane and his co-workers have done through the years in producing *Chemical Abstracts*. *Chemical Abstracts* is indeed "the key to the chemical literature", and without it, a search of what has been done in the past in any field of chemistry would be prohibitively difficult. But beyond this some means must be devised to put the literature in more workable form. We hear a great deal these days about "scientific teams". Perhaps we need a class of literature chemists on our research teams whose job it will be to search and digest the literature and hand their findings over to the laboratory chemists who will concentrate upon laboratory work.

Professional Philosophy

Dr. A. W. Fisher, Jr., F.A.I.G., Senior Chemical Engineer, Arthur D. Little, Inc., Cambridge 42, Mass.

THE reading of philosophy as a secondary hobby does not qualify one as an expert in the field, but it does give one the basis for a bit of thinking. The primary definition of philosophy in Webster is "the love of wisdom." Wisdom is given by the same source as the "ability to judge soundly and deal sagaciously with facts, especially as they relate to life

and conduct." I have come to believe much more strongly in the dynamic personal philosophy of these definitions, rather than the static though perhaps more elegant Philosophy which might be considered as a branch of learning concerned with the frozen philosophies of thinkers of the past. This Philosophy, with a capital P, has been catalogued and

usually degraded into dogma by the followers of the prophets. It may be considered a fixed body of ideas over which one can only argue as to interpretation or preference. On the other hand, my "small p" philosophy is my own. It is subject to daily change and revision and, I hope, improvement. Ralph Waldo Emerson's essay on "Self Reliance" which contains that wonderful line "Whoso would be a man must be a non-conformist," also pleads, as do many of his other famous essays, for the building of a philosophy based not upon the total acceptance or rejection of the ideas of other men, but upon the continued probing of other's ideas, accepting what is good and rejecting what does not fit.

Every well-adjusted person must have a sound philosophy covering his whole living; one which for him makes sense out of the complete picture of everything which touches his life; society, religion, politics, and his work, as well as the physical phenomena which surround him. This must be continually changed and brought up to date, consciously and subconsciously, every day of his life. An important part of the philosophy of a technical man might be called his professional philosophy. This does not involve science as such, since this is a body of fact and hypothesis which eventually can be proven true or false. Rather it includes his relation to his science and

to his fellow scientists and, as a scientist, to man in general. As in any other area of philosophy, one can find statements of a very positive nature by men of considerable prominence, some of which pull one way, some another. Almost every conceivable approach appears to be proposed by someone. Here the self-reliance which Emerson stressed is to me a very important factor.

What suits one cannot possibly entirely suit another and the means of achieving a sound professional philosophy is not to follow blindly one man, no matter how great, but to appraise carefully all the ideas of others, accepting one here and there and discarding the rest. Of course, one's own experience and ideas enter into the continually changing pattern. A meeting such as the recent Annual Meeting of THE AMERICAN INSTITUTE OF CHEMISTS, with emphasis on professional matters, provides a wonderful opportunity for re-evaluating, revising, studying, and then accepting the few best ideas into one's own philosophy. This is the real value of such a meeting to me. It is the continued striving for proper orientation of one's self in one's own situation that is the key to a truly successful philosophy. Perhaps this is a reasonable interpretation of Shakespeare's well known quotation from Hamlet: "This above all: to thine own self be true, and it must follow, as the night the day, thou canst not then be false to any man."

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A Message From The President

Dr. Lincoln T. Work, F. A. I. C.

WHEN President Flett left the office which he had served so well, his gracious words for the new President included a plea for the support and activity of the membership. Your new president recognizes that this is essential, particularly since the INSTITUTE has matured to a point beyond which it can only grow with increasing membership activity. We are proud of the people in this society who see their profession as something bigger than beakers or tanks, equations or laws—and who are willing to serve their fellows toward the full development of their profession. The Council and your president will endeavor to offer a program directed toward the important aspects of this problem. Your own suggestions, as Chapters or as individuals, will be welcome. Working together in the Institute, we can achieve a higher professional stature for the chemist.

A few points are offered as indication of the trend of this thinking. They are not final, and may be modified to fit your wishes as members of the INSTITUTE.

1. *Delineation of objectives:* For a vital organization, it is essential to keep before us the objectives to which we give our efforts. Under the basic objective, "To advance the profession

of the chemist in the United States of America," the INSTITUTE has grown substantially. From time to time, new aspects of this broad objective have appeared. It is rather to keep before us a practical and living purpose that we ought continually to give thought to this subject; and it would be most surprising if any sudden departure from the present goals which developed gradually over the years were to occur.

2. *Chapter activities:* The 2500 members of the INSTITUTE are distributed over the country so that there are two or three relatively large Chapters, about ten smaller groups in existence, and a few other cities like Detroit and St. Louis where such groups might be formed. These groups serve the useful function of maintaining association of kindred spirits, of studying manpower supply and helping in placement, of sponsoring meetings to reach individual chemists across the country, and of watching the trends at the local level which bear on our profession. The National Society wants to help the Chapters by advice and support on how to serve the locality, and wants the Chapter help on views and trends in each Chapter area.

3. *Legislation:* Many matters affecting the chemist and the engineer

arise; and there are some upon which the INSTITUTE may express itself and take action. Patents, licensure, impact of military obligations, wages and salaries, relations with others; all these and more may need the attention of the National INSTITUTE at which level policies must be decided. When the INSTITUTE can appropriately do so, and when the wishes of its membership are clear, then action will be taken.

4. Membership: Good though its growth has been, the INSTITUTE needs the support and the service of a larger proportion of those in the chemical and related professions. We have been fortunate in the group of executives now joined with us. It is harder to get a large participation of the young man just out of school. There is an area in the thirties and forties where men are becoming conscious of their part in leadership, where they begin again to appreciate the responsibilities in human association. Every effort will be made to reach all ages, that those who possess the appreciation of human values may have their chance to express themselves with us.

5. Honors and Awards: The INSTITUTE makes recognition of those who stand in a meritorious position. At the national level, this is through the Gold Medal and through honorary memberships. At the Chapter level, an important local award is the Chapter scroll, in which an increasing

number of Chapters are now participating. There are also the student awards, given by the Chapters to outstanding students. In their respective places, these must mean high standards and wise selection; giving too freely or in less warranted cases needs to be avoided. Though it is at all times difficult to make the best choices, a conservative and constructive performance in this matter is a real service to the profession.

New Unit: For the production of Kymene 138 and 234, wet-strength resins for paper, has been opened by Hercules Powder Company at Savannah, Georgia.

Graduate Work: Planned by Thomas A. Orofino, AIC student medalist for 1952, at Cornell University this fall. He has received a graduate assistantship, and expects to study in the field of physical chemistry towards the Ph. D. degree.

Appointed: By J. T. Baker Chemical Co., Phillipsburg, N. J. John T. Dillworth, Jr., as export manager. He was formerly with Sterling Products International, Inc.

Italy: Chosen to be the meeting place of the Fourth World Petroleum Congress in May 1955. The Third Congress was held in May, 1951, at The Hague.

Science and Human Relations

Dr. Fred J. Emmerich

President, Allied Chemical & Dye Corporation, New York, N.Y.

(Acceptance address when he received the 1952 Gold Medal of The American Institute of Chemists, at its Twenty-ninth Annual Meeting, May 8, 1952.)

AS I was sitting there listening to Mr. Flett* it came to me that he was displaying another talent which has not been heretofore disclosed.

Dr. Kirkpatrick in his introduction of Mr. Flett, made no reference to it, and I assume therefore he was uninformed, as you may be.

However, I feel I have a peculiar and personal duty in the matter, and hence I must tell you that in addition to his scientific attainments, Mr. Flett is evidently also an author of fiction.

The name of one of his characters is quite familiar to me, and it thus falls upon me to suggest that he could appropriately have made the reservation, which as you know is customary, to the effect that any similarity of names to other persons living or dead, was merely coincidental.

Be that as it may, Mr. Flett has furnished me with a big lift, which I warmly appreciate.

May I at this point also say that my friend Dean Dwyer of N.Y.U.

had this reminder for me. "Remember Fred (he said), if you don't strike oil in fifteen to twenty minutes, stop boring!" With this admonition in view, you may all relax and take comfort in the thought that "This too, shall pass away," and fairly rapidly.

While the verbal bouquets of the preceding speakers naturally give me great pleasure, simple justice compels me to put the credit for the honor which THE AMERICAN INSTITUTE OF CHEMISTS is conferring tonight where it belongs, namely, on those splendid people in our organization whose whole-hearted efforts and teamwork have done so much for the Allied Chemical company. I think you could stick a pin in our payroll and be reasonably certain of coming up with the name of a person whose spirit of cooperation and whose devotion to the cause set forth in the INSTITUTE's citation are at least equal to my own. The award is, therefore, one which I am supremely happy to accept on behalf of the Allied organization. I am proud of

* Mr. Lawrence H. Flett, Retiring President, The American Institute of Chemists.

this fine group and shall always treasure the tributes to their success which are being presented here this evening.

Both science and human relations came in with the dawn of the human race. Prehistoric man undoubtedly experimented and gained experience and created amity and also enmity, as people all over the world do today. It would appear that human attitudes through the centuries have not been materially altered though they might be said to fit the description the poet gave to the River, "Everchanging, ever the same."

The curiosity, the adaptability and the will of man produced for him a workable understanding of the forces of nature and the ability largely to harness them to his wants. Where he has not learned to control these forces entirely, man has learned generally to protect himself against their vagaries and their excesses.

With the advent of the printing press, the organization and application of knowledge began to speed up. More and more victories over nature were achieved. The resources of the earth, the air and the sea have been utilized in greater and greater measure. The means to satisfy the basic needs of man are available in unsurpassed abundance and comfort. Transportation and communication have made all peoples neighbors.

The advances in science in our own time have been fabulous. And yet

the world is in turmoil and the turmoil extends from families, to groups, to nations, to all civilization.

All of the things man needs, food, clothing, shelter, are at hand. Nevertheless the strife among men continues and the fruits of science are applied to mutual destruction. War, murder, deceit—men exert their ingenuity to the utmost and summon the profound depth of knowledge and science in the prosecution of these corruptions of the human soul. Now, where has the failure occurred? I would say that it is in human relations.

When successfully practiced, human relations are a compound of science and art, science based on a study of the past, art based on humanity. When unsuccessful by practice, they are an emotional upset to which neither science nor art would care to claim kinship.

Dr. Conant of Harvard wrote a few years ago, "Science is a speculative enterprise." He then went on to say, "The validity of a new idea and the significance of a new experimental finding are to be measured by the consequences—consequences in terms of other ideas and experiments." I like the way Mr. William Priestly of Union Carbide put the idea in a recent speech, when he said, "The solution of one problem presents a dozen new opportunities."

I see here tonight many friends and associates from our chemical in-

dustry, and I can't tell you how deeply touched I am that you should be here. I've had the opportunity to shake hands with many of you, and I hope that I can express my appreciation to each of you before you leave. Practically everyone here is connected in some way with the chemical industry, which as you know, is intimately related to science and operates according to the scientific method . . .

Its processes, its equipment, its products and their uses—are the outcome of scientific thought. Each has been carefully tested and each has been subjected to the rigors of skeptical experimentation. Each is judged by performance under commercial conditions, irrespective of prior conceptions. Moreover, the search and the drive for the new and the better never stops in a competitive race that may make a plant obsolete almost before its construction is completed.

The achievements of science as demonstrated by the results of chemical, medical and industrial research lead to the expectation of future progress unthought of today. Man will have, even beyond the present, the means of happy and full living, or, he will have the means of virtually complete self-destruction. The choice which the world will make between these alternatives lies in human relations. And here again, science has given us the means by which to influence the choice.

What, then, are the means by which we may hope for a solution of this problem? They too have been long at hand. They consist of applying to human relations, the scientific method of observation, with its dispassionate inferences, its conclusions uninfluenced by prior prejudices. Faithful and universal adherence to the scientific method in human relations would give us a world of peace and contentment.

It is true today that the field of human relations does not afford the opportunities the scientist seeks for controlled experiments. Few of our cases have identical facts, leading to identical conclusions, and we are not free to make the facts identical. None the less, the raw materials for study are numerous and the case histories are continuous. Historians and philosophers have set down their illuminative comment for all to read and to think about.

The application of the scientific method to the problems involved in the manufacture of goods and to the problems of health has been eminently successful. This is shown by the rapid and marked improvement in these fields which has taken place since the First World War. The scientific method proved itself conclusively in the accomplishments in chemistry, medicine, engineering and industry in the time of national trial

during the Second World War and since.

The question then arises why should not this approach be extended to relations between men? Why should not scientists with their trained minds carry the same practices over to the solution of human problems?

The application of the scientific method of human relations requires care and thought—

The study of history—to comprehend natural and legitimate human needs and aspirations;

The study of psychology — to understand their normal expression;

The study of economics—to approximate the extent to which they are unfulfilled and the extent to which our resources will permit their fulfillment;

The study of philosophy—to determine the form in which such fulfillment is most satisfying.

The stakes involved are high. The continued existence of the private enterprise system is dependent on the solution of these problems, as is also our cherished freedom at home, and as is peace here and abroad.

It will take a long time for even trained scientific minds to develop a practical way to mitigate the strife between large groups in any significant measure, but in the meantime, novices like myself can do some pondering on the problems of human re-

lations as we have to cope with them in our daily lives.

Granting the difficulties in evaluating the large variety of elements in human relationships, there is no doubt but that the influence of the individual increases, as the number of people concerned and the complexities become less. Each person is therefore to no inconsiderable degree a controlling factor in the determination of the nature and the course of the relations he has with other people day by day.

Human and personal relations begin with ourselves—by the way we think—by WHAT we think. The mind is affected for good or ill by the quality of the mental fodder on which it chews, just as the body is kept healthy through good food, and becomes ill from that which is tainted. I feel that I'm verging on the trite in saying that if the thoughts we live with are discordant, our relations with others become likewise discordant; if our thoughts are constructive and cooperative, so will our relations be.

The answer to the question as to what your novice might do about the problem of human relations thereupon becomes evident although both the process and the attainment of the objectives remain difficult and elusive. He can start with himself, know himself and apply that knowledge in an effort to acquire self-discipline and self-control. I do not pretend to



Dr. Emmerich Receives Medal from Dr. Fisher

be a good example of such self-government but I have tried to learn something from the example of the fine people whom I have been lucky enough to have around me. In fact, I have been doubly blessed—no, I should say—infinately blessed and should now also like to make a bow in the direction of my wife and family in that connection. My experience with some of my former attitudes makes me think of the story of the fellow who said, "Honesty is the best policy—I know, because I've tried both." Well, that fellow wanted to apply the scientific method to everyday human relations as he saw them.

As most of you are aware, THE AMERICAN INSTITUTE OF CHEMISTS was organized for the purpose of studying and improving human relations as they affect chemists. I have been very happy to be here and to present my thoughts to you and to encourage the interest of the Institute in the matter of human relations mayhap far beyond the confines of its own organization. And now, may I again express my feeling of deep gratitude to the members of this Institute for the compliments accorded to my associates and myself here tonight. Thank you.

The Bright Day of Chemistry

Retiring President, Lawrence H. Flett

(Address on the occasion of the presentation of the AIC Gold Medal to Dr. Fred J. Emmerich, May 8, 1952.)

THIS is the twenty-fourth award of the Gold Medal of THE AMERICAN INSTITUTE OF CHEMISTS since it was organized twenty-nine years ago. A man chosen to receive the Gold Medal of the INSTITUTE is so well-known that his introduction is a matter of setting the stage, not one of confounding the audience by hiding a grand man under a glittering gilded exterior. It is the opportunity to give expression to the thoughts that pass through the minds of the audience, everyone of whom is here as a personal tribute to the medalist.

This INSTITUTE is concerned with the chemist, rather than with the science of chemistry. Primarily, it is concerned with the chemists' relations with science and with industry. A chemist in an ivory tower sheltered from the human world is no concern of the INSTITUTE, but fortunately the ivory tower passed out of existence thirty years ago, as did the little red schoolhouse.

Today, the chemist, to be successful must be an effective contributing part of a productive organization. Even the chemist who is confined to the laboratory must learn how to seek cooperation from other specialists

such as analysts, physicists, and spectroscopists.

If the chemist is to play a part in the expansion of any industry, he must have a keen appreciation of the necessity of genuine cooperation with engineers, production men, labor, publicity, sales, market research, management and all of the many other functions that go to make up a modern, complex, chemical concern. Indeed, cooperation among all these groups must be perfect, because if any one group falls down on its appointed task, it wantonly destroys the creative efforts of all of the others.

This year, the INSTITUTE recognizes Dr. Fred J. Emmerich's leadership in fostering cooperation between all groups in the chemical industry. The medalist, himself, will set forth his philosophy on human relations, but in introducing him it is possible to point out some of the personal characteristics which bear on his success.

When Dr. Emmerich's citation, mentioning his devotion to the expansion of chemical industry, was first published, it was not long before the telephone rang. One of Dr. Emmerich's old associates was calling to congratulate the INSTITUTE on its

1952 medalist and to comment that he was so happy the word 'devotion' had been used because it was so true. A sincere, kindling devotion is the outstanding characteristic of the medalist. He is devoted to his God; he has a sincere devotion and love for his family; he is devoted to his country, he has served in the Army; and he has continued in his efforts to serve with the government and the chemical industry as a consultant and as an adviser. Finally, from the bottom of his heart, he has been devoted to the Allied Chemical & Dye Corporation and to his associates, with a sincerity which seems to know no bounds, a devotion which sees no accomplishment of his own but thrills at the accomplishments of all those who strive with him to get things done. The medalist likes people; he loves to deal with them. With his natural friendliness there is a spontaneous, almost boyish smile that serves to disarm the most hard-set opposition.

To all things, large and small, Dr. Emmerich brings a wonderful enthusiasm that seems to brighten up the most difficult situations. He is quickly and intensely interested in any new thought or new enterprise, and there is no relaxing of this enthusiasm until the project is complete.

Dr. Emmerich is modest to a fault. As I speak here, he is probably fearful that I might give him some un-

deserved credit. Unconsciously, he strives at all times to make certain that the full measure of credit goes to those who work with him.

In a changing world, viewpoints must change, too. Perhaps one of the medalist's most intriguing traits is his ability to change his ideas in concert with changing situations. Such ability is the mark of a progressive individual, because progress must be made through change. It is also a source of strength in time of changing conditions such as we are in now.

It is now thirty-two years since Dr. Emmerich joined one of the Allied companies. He has been associated with the Allied Chemical & Dye Corporation since its formation in 1920. That was indeed a time of crisis in the history of the American chemical industry, and I would like to review briefly the events that led up to it.

There had been chemistry in the United States since the days of the early settlers, and even before that, among the Indians. This chemistry consisted of homely arts, such as tanning, brewing, salt making, making textiles and dyeing. In the 1870's when the nation started to build the railroads, when the telegraph and the first petroleum pipeline came into use, chemistry started as an organized industry.

Then came that fateful day in American chemistry when the First World War cut off trade with Ger-

many and brought home to the American people, in a painfully startling way, how much we had depended on Germany for the drugs required to control serious diseases, for fast dyes, for flavoring material, and for other organic chemicals.

In the ensuing war years, determined Americans found out how to make those needed drugs and dyes. There was a nucleus of old but small companies, and many new ones sprang up, encouraged by an insatiable demand. There was no time to develop efficient processes, the only urge was to make more and more urgently needed products.

In 1920, when the Allied Chemical & Dye Corporation was formed, the war was over; and with the impending competition from well-organized foreign companies, the future of the American organic chemical industry was indeed dark. The majority of the companies that had been quickly organized to make these very necessary chemicals quickly passed out of existence.

As company after company failed, the chemist learned in a very hard way the priceless service of commercial science. He learned the meaning of economics through hunger, frustration, and want. This was indeed the most trying time in the history of the American chemical profession. It is out of this period that the INSTITUTE was organized.

A previous Gold Medalist of the

INSTITUTE, Francis Patrick Garvan, has been recognized for his contributions to the solution of that ugly situation. The INSTITUTE has since awarded the Gold Medal to such business leaders as George Eastman, the Mellons, and Willard Dow.

The Institute has also recognized the singular service of INSTITUTE members who helped and encouraged the unemployed chemist in that dismal period, by providing food, cleanliness, and a suit of clothes so they might be presentable when applying for a position.

Those companies that were able to meet the situation in what seemed to be impending disaster have turned that period into the dawn of a new day. From then on, the growth of chemistry in the United States has been without parallel in the history of the world. From that day forth, Allied has been a strong and dependable organization with which our medalist has played an increasingly important role. Now, as president, he is demonstrating a progressive leadership. His accomplishment is a matter of public record. In 1950, his college, New York University, honored him with the degree of Doctor of Commercial Science.

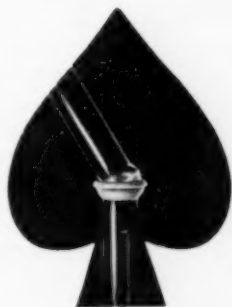
Since the dawn of this new day, the chemical industry has developed many useful products precious to Americans. Synthetic fibers as we know them today, such as nylon, rayon, acetate and Dacron, have been

developed; the synthetic rubber has been a phenomenal experience; the antibiotics and the synthetic detergent have been an important factor in adding another twelve years to our expected life. New insecticides and low-cost fertilizers served to enrich the food supply. Out of an ugly duckling of the 1920's has come the modern automobile, made beautiful with new finishes, made safe with shatterproof glass and made powerful with new high-test gasoline. Plastics have become the basis of so many things that almost anyone at any time can reach out and touch something made of plastic. Allied contributed to these developments, but they rendered their greatest service in the very important but less known role of supplying the basic raw chemicals from which the finished products have been made.

Better food, better clothing, and better shelter have served to make the American people prosperous and happy. These are not the gifts of any government, but they are rewards of the kind of cooperation in chemical industry that is being recognized on this occasion.

People are already calling this the Chemical Century and the Chemical Age. It has indeed been a very bright day, but through all the brightness, the chemist still looks for leadership in the field of commercial science. He knows that the sun does not stay forever at the zenith. He knows that the chemical industry has been

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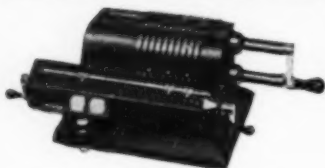
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expanded in a way that could not possibly be continued indefinitely within the confines of this sphere called Earth, and he knows that the problems ahead are not scientific problems but economic and political problems. At such a time as this, the American chemical industry can find strength in their fine leaders, as exemplified by Fred J. Emmerich.

Any man who works under high pressure must have favorite avenues of escape. Dr. W. G. Bywater has pointed out that woodworking is one of the valuable and favored means of relaxation. The medalist is known for his great skill in restoring what he chooses to call "old furniture."

AIC Officers

The following officers were elected at the AIC Annual Meeting, May 7, 1952: President-elect, Dr. Donald B. Keyes; Secretary (re-elected), Dr. Lloyd Van Doren; Treasurer (re-elected), Dr. Frederick A. Hessel. These officers will serve for two-year terms, Councilors elected to serve for three-year terms are: Dr. Donald Price (re-elected); John H. Nair, and Charles C. Concannon (re-elected).

The role of introducer is a singular one. To be asked to introduce a medalist is an honor that is highly prized. Medals have been declined; people have declined to present medals; but the privilege of introducing the medalist is never declined. In choosing me, I am sure that Dr. Emmerich was seeking to recognize those who have been associated with him throughout all of his years with Allied.

In closing, I would like to make just one more comment. I have pointed out Dr. Emmerich's modesty and his love of people that gives warmth to his friendly smile. I know he does not like this term, 'Dr. Emmerich,' which is used because this is a formal occasion. He likes to be known as 'Fred.' And as 'Fred,' he has chosen to approach his role of leadership with humility.

Presentation of the AIC Gold Medal for 1952 to Dr. Fred J. Emmerich

Dr. Harry L. Fisher, Hon. AIC

Research and Development Branch, Synthetic Rubber Division, Reconstruction Finance Corporation. Chairman of the AIC Jury on Medal Award

CHEMISTRY is big business, and much is required of the men who run it. Those in charge must know chemistry and its progress, and especially how to provide for research and development, how to produce chemicals, and how to arrange for selling, advertising, and financing.

Some men are trained in chemistry and then study business methods; others are trained in business methods and study chemistry afterwards.

Dr. Emmerich: You learned business early the hard way and you told me that you enjoyed it. Now you are president of one of our largest and most important chemical corporations. Your accomplishments and attributes are many and notable.

Therefore, you have been selected "for noteworthy and outstanding service to the science of chemistry," and it is my pleasant duty to present to you the 1952 Gold Medal of THE AMERICAN INSTITUTE OF CHEMISTS.

Presentation of Honorary AIC Membership To Dr. Emmerich

Dr. Lincoln T. Work, AIC Incoming President

(The Gold Medal of the AIC carries with it Honorary AIC Membership)

BEING the high honor of THE AMERICAN INSTITUTE OF CHEMISTS, the award of the Gold Medal is made to one most worthy under the standards of the society. The recipient should be and is worthy of membership at its highest level. Accordingly, the medalist is added to our ranks as an honorary member with the following citation:

Dr. Fred J. Emmerich, "a leader of the chemical industry who is de-

voted to its expansion by fostering cooperation among men skilled in chemistry, engineering and commerce."

On behalf of THE AMERICAN INSTITUTE OF CHEMISTS, I present to you this certificate in token of your becoming one of us. It carries the citation, is signed by Lawrence Flett, president, and Lloyd Van Doren, secretary. We welcome you most heartily to THE AMERICAN INSTITUTE OF CHEMISTS.

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Public Relations for The Chemist

Robert L. Taylor, F.A.I.C.

Vice President, Hill and Knowlton, Inc., New York, N.Y.

(Introductory remarks by the chairman of Concurrent Session B, at the AIC Annual Meeting, May 7, 1952.)

PUBLIC relations, in essence, is "dealings with people." As part of the broad science of human relations, it is as old as civilization, as ancient as the continuous struggle for men's minds.

In its modern formalized concept, however, public relations is hardly a generation old. In this form it has achieved little stature or recognition outside of the United States. Perhaps, indeed, there is some significance in the fact that it has found its greatest development in the world's leading democracy.

Reduced to its simplest fundamentals, good public relations can be defined as doing the right thing and telling people about it. It is what in an individual amounts to good character plus good reputation.

This means, first and foremost, establishing and living up to policies and procedures that are clearly in the public interest.

It means, secondly, giving public expression to actions that are in accord with such policies and procedures in a way that will generate public understanding and appreciation of the individual, the company, the industry or the profession from which they spring. Bragging and blatant self-praise obviously have no place in this picture. What is needed

is a simple presentation of the facts.

In considering this definition of public relations, some persons may wonder why, if the first part is carried out fully, the second part is necessary at all. If policies and actions are right, if they are aligned with the best interests of the public, why is it necessary to use such devices as publicity and advertising to tell the public? Don't the good deeds speak for themselves?

The answer based on experience is that they do not. In a complex society comprised of millions of people, it is too much to expect the public to be informed without a conscious effort to supply the facts and information. That is why the "telling" function of public relations increases with the size and complexity of the public to be reached.

Why is public relations so important to the chemist? Why should he care what the public thinks of him, or his profession, or the industry for which he works? What difference does it make?

Primarily this. Public opinion is a powerful force in a democracy. Hostile public opinion, or even lack of favorable public opinion, can throttle a profession or an industry almost as effectively as deliberate curtailment of the demand for its

services or products. At the same time, increased public regard for a profession or industry cannot help but redound to the benefit of the people in it.

But there is also another reason, even more important and far-reaching to those of us who believe in freedom and private enterprise. Science and scientists have much to lose if the trend toward government domination of our economy continues to its logical end of complete state socialism. A greater public awareness of the contributions of free science and private industry to our American standard of living can be one of our best weapons against this happening here.

Finally, let me emphasize that the public relations job for an industry, a company, a profession, or any other group effort, is essentially a personal job for every member of the group. It is not something that can be left to the people at the top or that can be turned over to a group of specialists. It is a job that must be done by many individuals on a precinct basis.

Anyone who has participated in campaign work of any kind will realize the importance of that statement. No charity drive would ever reach its goal, no political campaign could possibly succeed, if it did not have a precinct organization to contact individuals. That principle is basic to success in any approach to the public.



And that is where each of us as an individual comes in. We all have numerous contacts with people in other industries and representatives of the government and the public. When the opportunity presents itself, we should be ready to talk in a well-informed way about our profession, our industry, our company. We personally represent these groups to the public. We are their ambassadors. If each of us will try to meet the problems of public understanding that concern them, in our own area and among our own friends and acquaintances, we will have made a substantial contribution to better chemical public relations.

Announced: By Dr. R. P. Dinsmore, F.A.I.C., vice president, Good-year Tire and Rubber Company, the appointment of A. J. Gracia as assistant manager of research development. He was previously associated with the office of the vice president. James D. D'Ianni, F.A.I.C. will fill the post formerly held by Mr. Gracia.

The Chemist and His Industry—Chemical Companies are People

Dr. W. G. Bywater

Vice President and Director of Research, S. B. Penick & Company, 50 Church St., New York 8, N. Y.

(Presented at the AIC Annual Meeting, May 7, 1952, as part of Concurrent Session B.)

CHEMICAL companies have been stamped by the personality of the founders who fathered them and by those who mothered them during their formative years. Individuals chosen to execute the required duties and responsibilities were knit together in a relatively small family and were profoundly influenced by the usually strong personality of the founder or founders. The field of operation of the companies was delineated in rather narrow ranges although visions of great opportunities must have been seen by those men who were instrumental in the formation of strong chemical companies. The names of du Pont, Bakeland, Queeney, Dow, Midgely, Edison, Whitney, Langmuir, come to mind as men whose ideas and discoveries have shaped or helped shape the destiny of great chemical companies. Consciously or unconsciously the scientific method was applied to develop a general and specific plan of operation and development.

Today's companies have become complex operations requiring a family of highly trained chemists, physicists,

biologists, chemical, electrical, mechanical, and industrial engineers, technically trained salesmen, cost accountants, patent counsel, and financial, personnel, and tax experts. The size of the family is determined by the size of the company and by its scale of operations.

The individuals comprising this family group are brought together for one objective: to advance profitably the competitive position of their organization. A healthy competitive position can be achieved only by supplying the community a new, useful product or by developing new processes whereby an old product can be made available at lower cost to the consumer. Our hypothetical family, therefore, functions to produce new products and processes.

What personnel, or, if you please, internal-relations rather than public-relations, problems arise in this organization? For purposes of this discussion let us define internal relations and limit the discussion to the relationships involved in the development of a new product which has reached the pilot plant stage.

Internal relations is that function of management which fosters the development of men and women within the organization who are devoted to achieving the objectives of the company. It creates that atmosphere of "at-homeness" and team spirit so necessary to successful operations within the organization. It develops the method of internal communications required to keep the staff informed of objectives to be gained and of progress being made.

Let us assume that our family is well housed and works in healthy surroundings. A palatial mansion is not necessary for healthy growth, but sufficient room and adequate facilities to do the needed experimental work are required to keep the group together. Good tools supplied will materially increase the interest of the individual in his work and new tools will present a challenge to learn how to employ them properly to obtain data required to solve the problems at hand.

Good Internal Relations

It is an inherent quality, or one acquired by training, that people usually want to contribute to the good of the group by presenting new ideas or new methods and opportunity should be given to them to do so. Frequent formal and informal meetings are used as the medium to present such ideas within the company. Such meetings may be held at infrequent intervals to include not only

technical men but also those who are concerned with other aspects of company operations, if only to discuss progress and products in general terms.

More frequent meetings, including the complete technical staff, should be held to acquaint this part of the family with how and what progress is being made. Here specific details of new methods, products and processes can be presented and explained to the pilot plant operator, the chemical foremen, and the engineering staff. The definition of objectives which have been or should be set up can be delineated. Every effort must be made to acquaint the technical staff with business, sales, and financial problems which affect the operation as a whole and which pertain specifically to the problems under discussion.

As in any family, certain members are sent out into the world to tell what they have been doing and how their work will affect technological progress. Such contacts are encouraged not only among chemists but also for production men and engineers. Attendance at local meetings where problems of mutual interest are discussed affords an excellent means of learning that a community of interest does exist in this chemical world of ours. Senior staff members should be permitted to attend national meetings covering their respective interests at regular intervals

and encouraged to present papers describing their work.

There is another aspect to the creation of that feeling of "at homeness." Each family member must be assured that his progress is appreciated and is properly recognized, that proper credit is given for contributions made. This is accomplished in part by means of the staff meetings, attendance at national meetings, and by calling upon him frequently for consultation. The peculiar aptitudes of each man must be recognized. We think no less of the young man who is an expert pianist but unable to play the violin or the clarinet. The player of each understands music but plays a specific instrument and while individually they may play beautiful tunes, combined they may render a symphony. Yet credit must be given for the part played by each in producing the whole, for the perfection of each makes the product more acceptable to all.

However, it is oftentimes extremely difficult for the chemist or the engineer to make himself understood by those who need most to understand what he is driving at. The writing of reports clearly and concisely describing progress, current status and conclusions from experimental work is necessary not only to acquaint management with the essential facts but also to help clarify thinking applied to the problem. The conclusions in a report should be as sharp as a tack

and aimed at their objective so that the reader will sit up and say "Ouch," or want to go back and learn more about the subject. D. H. Killeffer, F.A.I.C., in his book, *The Genius of Industrial Research*, illustrates the type of ambiguous statement often encountered, by quoting from a brief article in the *New York Herald Tribune*:

"A New York plumber wrote to the Bureau of Standards in Washington saying he had found hydrochloric acid good for cleaning out clogged drains.

"The Bureau wrote him: 'The efficacy of hydrochloric acid is indisputable, but the corrosive residue is incompatible with metal permanence.'

"The plumber replied he was glad the Bureau agreed.

"The Bureau tried again, writing: 'We cannot assume responsibility for the production of toxic and noxious residue with hydrochloric acid and suggest you use an alternative procedure.'

"The plumber again said he was pleased the Bureau agreed with him.

"Finally the Bureau wrote to the plumber: 'Don't use hydrochloric acid. It eats hell out of the pipes.'"

Facilities should be available to make reporting and calculation of data as painless as possible. Photographic processes are available which make it possible to reproduce graphs and curves directly from notebooks for incorporation into reports. Calculators, "ditto" machines, and prepared forms all serve to speed report preparation and allow more time to draw sharply defined conclusions and formulate future plans.

Like the musician who employs bars, notes, and other signs and sym-

bols to express his creation of musical masterpieces, the chemist or engineer uses his signs and symbols to express his formula for new colors, textiles, drugs, and plastics which contribute so much to our good life.

The Development of a New Product

The application of these general principles to the development of a new product can perhaps be best illustrated by considering the factors involved when a product reaches the pilot plant, for at this stage there is a meeting of the minds of the people concerned with the future of the product. In our organization, a meeting is first called to outline the project and its status. The objective of the pilot plant work is carefully outlined and specific assignments made. After a preliminary survey of costs, projected costs, and evaluation of the product, a second session is held at which time suggestions are made regarding alternative methods of processing, improved handling methods, and an effort is made to see that each is given full consideration. When the first successful pilot plant runs are completed, representatives of production, sales, engineering, and financial groups are brought together and given a progress report and the anticipated demands which will be made upon the various facilities of the company are outlined. A special committee is then formed, cutting across all lines of authority to

develop the product and its processing.

Each man involved in such development must be thoroughly impressed with the importance of the product or its potentialities and encouraged to incorporate his own ideas into its development. The research man, the pilot plant operator, the design engineer, the market survey expert must have a complete outline of the problem and a sympathetic understanding of the viewpoint of all who perform their various functions. The cost accountant can make his contribution by pointing out spots where economies might be considered as a result of his economic studies. It is important to introduce such economic thinking early in the study of a potential new product, for often it has not been adequately considered by the research man who fathered the new idea.

The suggestions and ideas presented during the initial pilot plant development must be given full consideration and, if not adopted or tried, an explanation should be given to the man who made it of why it was not done. It is a safe statement to make, I believe, that the people, from the laboratory bench or the pilot plant operator to the vice president in charge of technological development, will be enthusiastic about the development of a new product if they understand what it will do and the general plan of going about getting it

THE CHEMIST AND HIS INDUSTRY . . .

to do the job intended. The work of each man can thus become an adventure instead of a job to do.

Men who have a thorough understanding of the policies of the company and of the new product being developed are then assigned to publicize its development and present its qualities to the chemical industry and enlist field trials. It is their opportunity to brag a bit about new developments made by their organization. They must learn how acceptance of the product will affect the family group to which they belong. They must diplomatically enlist field trials of their product, presenting sound data for its proposed uses, and return to their organization with full reports of the product's reception. It takes a good diplomat to bring back to the research man who has nurtured the product reports of inadequacies or even failure. Often sufficient attention is not given to reports of the field man (technical salesman), but once his viewpoint is understood and his integrity for accurate reporting is established, his data are accepted in good faith and acted upon.

Finally, in terms of an anonymous poet:—

The wisest men that e'er you ken
Have never deemed it treason
To rest a bit, and jest a bit,
And balance up their reason;
To laugh a bit, and chaff a bit,
And joke a bit in season.

—From an old calendar
(From Popular Research
Narratives)

Informal social gatherings, a pause to appraise and become re-acquainted tend also to create that spirit of "at-homeness." Plant or laboratory "open house" affords an opportunity for each of our men to show his associates what he has been doing and each learns to explain his work in the simplest terms possible so all may understand. Such informal gatherings may perhaps break that reserve inherent in some chemists and engineers and invite them to become part of the company community. The technical men in chemical companies are no different from the man next door with his interest in his job, his family, community affairs, hobbies, and taxes.

Like the highly skilled musician who must rest and relax after intense application to his skill in producing a technically perfect rendition, the chemist and engineer also require relaxation and a change. It is interesting to note that many technical men turn to music, painting, philately, fishing, gardening, glass collecting, or wood-working as hobbies for their periods of relaxation. Some serve their communities by participation in church, parent-teachers' associations, and town governmental functions. Others participate actively in the functions of those organizations in our chemical industry devoted to creating a better understanding of what the chemical industry is and what it does. The technical man

is more frequently stepping out of the proverbial "ivory tower" and making himself heard in those social areas which affect his family, his job, and his industry.

Current Officers: Of the Commercial Chemical Development Association are: President, Charles W. Walton, Minnesota Mining & Manufacturing Co.; Vice President and President-elect, Dr. Wayne E. Kuhn, F.A.I.C., The Texas Company; Executive Secretary, Lester E. Johnson, U. S. Industrial Chemicals Co.; and Treasurer, Dr. Nolan B. Sommer, M.A.I.C., American Cyanamid Company. L. A. Watt, F.A.I.C. consultant of Kirkwood, Missouri, is a director.

Elected: To membership in the Texas Academy of Science, Ora Blanche Burright, F.A.I.C., of Houston, Texas.

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To California: From Olney, Illinois, William P. Webb, A.A.I.C., who is now employed by California Research Corporation, at Richmond.

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The Chemist And The Public

Kenneth E. Mulford

General Manager, Industrial Chemicals Department, Atlas Powder Company, Wilmington, Delaware

(A condensation of a paper presented at the AIC Annual Meeting, May 7, 1952, as part of Concurrent Session B.)

CHEMISTS have certain basic advantages towards achieving public esteem.

The word "chemistry" is regarded generally as synonymous with progress. From chemical laboratories have come a host of new products which have bettered living standards in this country and throughout the world. Chemists are respected and admired for their achievements.

Secondly, chemists are viewed as highly educated, professionals. Chemists are trained to understand the mysterious workings of test tubes, powders, and other things unintelligible to the average layman. People admire people for their intellectual achievements.

The chemist, however, also faces certain underlying public relations handicaps.

The lay public is naturally suspect of those who work with strange equipment on things the average person does not understand. From a public relations standpoint, whatever can be done to remove the aura of mystery concerning the work of chemists will be helpful.

Secondly, chemists as a group seem to be rather introspective. Many

chemists prefer their own company, or at least the company of intellectual equals (and that automatically narrows the field to a relatively high plane). The chemist frequently is regarded as "just a bit different" by his neighbors.

The third inherent disadvantage is that of language. Chemical terms are complex, and chemists naturally get in the habit of using a complicated vernacular. Far too few chemists seem to be able to express themselves in verbiage the average person readily understands.

When one takes a dispassionate look at these advantages and disadvantages, it seems obvious that the plus factors far outweigh the negative. Fundamentally, public opinion favors the chemist. Despite this, it is generally acknowledged that the chemical industry and the chemical profession face serious public relations problems.

In my opinion, these difficulties can be traced primarily to two transcending happenings. Both are related to the underlying climate of opinion in the United States, and both illustrate the potentialities of the handicaps mentioned previously—public

suspicion and language difficulties.

The American people are always susceptible to waves of National sentiment, and during World Wars I and II we strongly disliked the German chemical industry as an integral part of the German war machine. Words like "synthetics," "substitutes" and "ersatz" became unpopular terms in the American vocabulary. This war-born attitude has impeded public appreciation and understanding of the tremendous achievements of our own chemists.

The second important "climate of opinion" factor is the very rapid expansion of the American Chemical Industry. New products have surged forward from the chemical laboratories and through the manufacturing and processing plants. The American people suddenly recognized that new chemical developments affect many phases of their daily lives.

In an atmosphere like that, when a controversy developed concerning chemicals in foods, the public was jolted. Relatively few paused to realize that chemicals have been used in foods since time immemorial. Instead, a public relations problem arose that seems to plague the chemical industry and all members of the industry.

A Special Committee of the House of Representatives, under the Chairmanship of Representative James J. Delaney, of New York, recently concluded nearly two years of public

hearings on all phases of the chemicals in foods issue and several other related matters.

On the whole, the Delaney Committee hearings reflected the high sense of responsibility which governs the entire chemical industry in the food field. Nevertheless, as might have been expected, sharp differences of opinion were expressed regarding the seriousness of the situation. As a result, considerable adverse publicity was incited affecting both the food industry and the chemical industry.

Although the Delaney Committee's final report has not been issued, undoubtedly it will advocate some form of legislation requiring that food additives be approved by the government before marketing.

The chemical profession should view this matter realistically. The government has both the right and the responsibility to protect the health of our citizens. Likewise, everyone favors pre-testing new chemicals designed for food use. It would seem, therefore, that framing prior approval legislation would be relatively simple. Actually, it is exceedingly complex.

So far as the writer knows, no Bill has been submitted which is both practical and, at the same time, meets the ultimate objectives of the Food and Drug Administration. The original Miller Bill was hastily drafted by FDA and presented primarily for purposes of discussion. Re-

cently, the Manufacturing Chemists Association suggested another version, (see *THE CHEMIST*, April 1952, p. 169), but the MCA proposal probably does not go far enough to satisfy FDA. The ultimate legislation, if any, probably will be somewhere in between.

Rather than discussing specific language, it seems more fruitful to call attention to six practical problems involved in prior approval considerations—each potentially affecting the chemist.

First, allocation of responsibility. Who should bear the burden of clearance with FDA—the manufacturer of the chemical additive, the user of the additive in a food product, or both?

Second, applicability. Is there not need for some common sense yardstick — perhaps a “grandfather clause” exempting products used for a number of years?

Third, definition of “proof of safety” and “adequate testing.” Must not safety be viewed a relative, not an absolute, matter?

Fourth, the need for practical, specific testing criteria. When reputable scientists differ as to the adequacy of tests on individual products, are not such guideposts absolutely necessary?

Fifth, the timing factor. Should there not be provisions protecting against unreasonable administrative delays?

And sixth, the usefulness issue. In the interest of technological progress, should not safety be established first, with usefulness determined later by public acceptance?

The food additives issue is only one of the public relations problems facing chemists. Stream pollution, air pollution, various aspects of the defense effort, are among others of both community and national importance. Last year, the Manufacturing Chemists Association embarked on a comprehensive program to gain better public appreciation. Chemists, as key members of the industry, should participate in this effort.

Chemists are in ideal position to “carry the torch” to some of the most important opinion-forming sectors—college professors, doctors, nutritionists and so forth. Because of their training and positions, these professional groups can be of tremendous assistance, if they understand the chemist’s problems and points of view.

Most chemists have more training and experience with physical than with emotional reactions. They are accustomed to reaching logical conclusions based upon certain set conditions. However, cold logic isn’t quite enough in the public opinion field. More intangible factors—such as underlying public attitudes, timing and wording—have to be considered.

A determined public relations effort, therefore, may seem a bit strange. It is extremely important, however, to the future of the chemical profession—a worthy project for THE AMERICAN INSTITUTE OF CHEMISTS. In the long run, there is every reason to anticipate success. For the important thing is that, fundamentally, the American People are on the side of progress.

Moderator: Dr. A. W. Fisher, Jr., F.A.I.C., who served in this capacity at the Panel Discussion held by the American Institute of Chemical Engineers, Boston Section, April 16th.

New Location: Dr. W. F. Fair, Jr., formerly at Mellon Institute, is now with the Koppers Company, Inc., 449 South Avenue, Westfield, New Jersey.

Relocated: Richard E. Mudder, F.A.I.C., formerly with Mellon Institute, now at Koppers Company, Inc., Verona, Pa.

Appointed: By the Council of the Association of Consulting Chemists & Chemical Engineers, 50 E. 41st St., New York, 17, N.Y., Robert T. Baldwin, as executive secretary and assistant treasurer, and A. B. Bowers, as director of publicity and assistant executive secretary.

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New Position: Eugene R. Kuczynski, A.A.I.C., who is now in the Research Division of Leeds & Northrup Co., Philadelphia 44, Pa. He was formerly with Burgess Battery Company, Freeport, Ill.

New Plant: For the manufacture of toxaphene insecticide base, being constructed at Henderson, near Las Vegas, Nevada, by Hercules Powder Company. Operation is planned for 1953 with an operating force of sixty to seventy persons.

The Chemist and His Country

Dr. George F. Rugar, F.A.I.C.

*Assistant Manager, Technical Service Division, Diamond Alkali Company,
Painesville, Ohio*

(Presented at the AIC Annual Meeting, May 7, 1952, as part of Concurrent Session B.)

IT would appear that there should be universal agreement that the chemist like everyone else should be loyal, in its broadest sense, to his country. It may be just an old-fashioned idea, but it makes sense to me. I do not want it thought, however, that I advocate blind adherence to the policies of the current political party in power, which ever party it may be.

Let us look first at some facts that show how seriously chemists do recognize their duty to their country and how they live up to their obligations.

The plain, prosaic fact is that the rank and file chemists in their daily work are contributing greatly to the welfare and progress of their country. The control chemist who conscientiously carries out routine analyses to insure the quality of his company's products is doing his part to support the smooth functioning of the economy. The research chemist who carries out detailed and repetitive laboratory bench experiments to try to utilize some waste material or unutilized by-product is aiding in the conservation of our natural resources and insuring raw material supplies

not only for the present but also the future. Again, the petroleum chemist who investigates entirely new methods or improvements in old methods of refining that will result in greater yields from the crude is providing for our continued independence of foreign sources for the infinite number of products derived from this versatile raw material. The chemist who makes mud pies in the testing of soil conditioning chemicals that will permit the greater utilization of untractable soil and prevent erosion of tillable land is certainly benefitting his country. The chemist who develops a better insecticide for cereal crops adds to the food supply and helps to maintain the health and well-being of our citizens. We could carry on this listing of loyal hard-working chemists to considerable lengths but perhaps we have already given enough examples.

I believe, however, that we might go to a different category. There are chemists in many communities who are working, on a volunteer basis, for the abatement of air pollution, steam pollution and general improvement of the physical condi-

tion of the community. They serve on school boards and work to improve the educational training in elementary and secondary schools. They belong to service clubs, Boy Scout and other youth organizations and work to assist in making better and more valuable citizens.

Some others we should look at are the many conscientious chemists in various government laboratories. There are, for example, those in the four regional laboratories of the U.S. Department of Agriculture. Their work is directed toward the greater utilization of our country's resources and an improvement in the condition of our farming communities. In this connection we can pay tribute to the chemists who are active in the program of the Chemurgic Council. They are doing a great service to their country by combining farming and industry. This can insure greater prosperity for both parts of the economy and help to foster an independence from foreign resources of raw materials.

It is popular to proclaim that we live in a complicated world; it has become a habit too for certain government officials to maintain that we have a state of emergency. In fact, if we look at the record, we find that we are reputed to have lived in emergencies for the last twenty years. We might inquire as to what part the chemist has played in creating and solving these emergencies. If we

go back in history a little farther, say to World War I, I think we can properly say that American chemists had no part in causing this conflagration. On the other hand, I think we could not so lightly dismiss the chemists of some other countries in this regard. However, it may be that they did not voluntarily contribute to the situation that led to war. The development of nitrogen fixation which prolonged the war was done from patriotic motives and loyalty to their own country. American chemists for their part recognized their responsibility to our country and proceeded with the development of chemicals which aided in securing victory. With this impetus, chemists continued with research, development, production, and marketing methods which have made our country practically independent as far as chemicals and related products are concerned.

There was another emergency along in the early thirties which was precipitated on one black October day in 1929. I don't believe that chemists or chemical companies had much to do with this event. But do you remember the flurry about Technocracy? It was a little difficult to find out just what Technocracy was supposed to be, but my recollection is that scientific progress was looked upon as a bad influence and should be curtailed if not completely stopped. The chemist who had helped

develop the achievements of science was in bad repute. The idea of Technocracy did not have a very long life. However, it had some vociferous adherents at the time. During these years, the chemist did not have an easy time of it. In fact, he was one of the class that was hit the hardest.

If we pass over a few years we come to World War II. We need not mention more than the synthetic rubber development and the atomic bomb project to illustrate the stupendous accomplishments of the chemist, chemical engineers, and other scientists. These and a host of other activities attest to the loyalty of chemists during this period. They say it is the exception that proves the rule. I don't know whether or not this is so, but there was almost no exception in the loyalty of U.S. chemists to their country. I only wish we might have had a perfect record.

Political Judgment Essential

I have already mentioned that we live in a confused world and it is no wonder to me that some chemists lose their perspective. We have seen many others fall for false propaganda, even highly placed government officials. Let us return to the chemist and how he reacts to the constant beating of propaganda on his ears. Only recently an eminent American chemist, himself well-known for his own research work and the direction of others, stated that

he would not be surprised if he were to find research chemists who had listened with a sympathetic ear to anti-American propaganda. He was contrasting the research chemists with those in a certain other field, but if this is true of some of our research people then we had better take note of it. Why is their education so limited that they are unable to have common sense in judging political philosophies, or is it even worse, are our teaching staffs of high schools and colleges leading them in the wrong direction? May I quote from Robert B. Semple¹, F.A.I.C., president, Wyandotte Chemical Corporation, "If we are agreed that the chemist and chemical engineer is no longer just a technical man, limited to a personality confined within the breadth of a slide rule, or within the confines of the laboratory, and that he has a background and a talent that can give even greater service to mankind, should we not give greater consideration to the following:

(1) A more drastic revamping of the curricula of our principal technical schools so that students in chemistry, chemical engineering, and other technical subjects may be taught, also, principles and theories in human relationships—the history of our world and economic forces and theories so that they will be better equipped for supervisory responsibilities and can discharge management duties more

¹ The Chemist in Today's World, C. & E. N., 28, 1637 (1950)

adequately, and can understand and interpret their responsibilities in relation to the world at large." I would strongly urge that you look up and read this thought-provoking address. I am sure you will get a lot out of it.

The Chemist as Citizen

There are so many ways in which the chemist can serve his country, that I will mention some but not attempt to be all-inclusive. In my opinion, whatever is done to support a community supports the country and so I will start at the community level. As a result of his scientific training the chemist has much to offer which can benefit his neighbors. This can take the form of advising on water supply, sewage disposal, sanitation, air pollution, rat control, weed eradication, and a host of related subjects. Another of present importance is the support of civil defense programs. Of even greater importance is the need for eternal vigilance to thwart the plans of the saboteur. The safest and most effective place for the saboteur would seem to be in the high echelons of the civil defense organization. In this position he has entree to the municipal or other power plant, to the water works, to all important industrial plants in the area. One saboteur in the Civil Defense set up could do a tremendous amount of crippling damage. One way to keep him out is for you to get in.

There are frequently matters that

come up for discussion in the community on which the chemist is informed and can assist his neighbors in arriving at a sound decision. During the week of the American Chemical Society meeting in Buffalo last March, the local papers were full of reports, discussions, letters to the editors, charges and counter-charges because it had been proposed to add sodium fluoride to the water to avoid dental caries. When I returned home I found the same controversy raging in Cleveland. The chemists' support in such matters would be exceedingly helpful.

A topic which engages the time of many thoughtful people is the apparent lack of integrity and moral responsibility in persons in places of trust. Some of these are elected government officials and others are appointed through civil service and other ways. To many, the widespread character of the situation is simply appalling. It does not alleviate the gravity of the matter to say that it is no worse now than it has ever been. However, it may compare with other periods, it is not something in which we can take any pride. The AIC has a code of ethics; other scientific societies have similar codes governing the activities of their members with which they seem to live happily; why then should we not insist that government officials abide by an equivalent code of ethics? Failing this, let us adopt the slogan, "kick the

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rascals out" and do something about it. Are you happy in the knowledge that while you must pay your federal income tax, there are those in the Internal Revenue Bureau who can forgive the tax of those who know the ropes? And have you made an estimate of how many of us are required to make up the amount of forgiven taxes involved in one such piece of wangling? This kind of shenanigans is undermining the welfare of our country and represents an instance of where we can all do something to stop it.

We could talk about crime and racketeering but I have only one comment to make here, namely, that various cities have organized non-partisan citizens' committees to work for exposing crime and cleaning up their communities. Chemists could do much by joining such groups.

Generally speaking, the chemist has the same relation to his country as any other citizen; he should not be set apart in any way simply because he is a chemist. On the other hand he has been described by the

late James G. Vail, F.A.I.C.,² "The scientist (chemist) has a type of training and an attitude of mind toward his observation which could be of great use if applied more generally. He thinks critically and is not easily swayed by ill-founded assumptions, fear, or hysteria." This seems a fair description and accepting this as fair, it places a greater than usual responsibility on the chemist.

A New Cabinet Post?

The role of the chemist, the chemical engineer, the physicist and other groups of scientists has become firmly established in the layman's mind and is beginning to penetrate the consciousness of the politician. It may be that the time is approaching when we should think about making the technical know-how of all these scientists readily available to our national government. This could be done by creating a new cabinet post, which we suggest might be called The Secretary of Science and Technology. The secretary would be a man of varied experience in industry, with a wide acquaintance among scientists, with an intimate knowledge of facilities at our colleges and universities as well as private research laboratories; in fact he should be several people combined into one. He should be available to advise the President and other government officials on all governmental matters wherein science and technology might be involved. In

² C. & E. N., 28, 2147 (1951)

such a set up there would always be at hand the means for the government to obtain expert advice on these matters.

In making this proposal I realize that this would be adding to our already over-expanded bureaucratic government and furthermore, that arrogant officials could ignore the Secretary and his group of experts.

In spite of these considerations, I still feel it is something to work toward.

We have directed our remarks so far to the activities of the chemist in his own country. Under present day conditions, it is not possible to remain aloof from the rest of the world even if that were our wish. Chemistry and other sciences are properly international in character. Historically, this has not always been the situation; the alchemist, for example, was a strict individualist who jealously guarded his own ideas. There was a gradual development away from that attitude and, except for war periods, chemists in all countries published their work and discoveries without restraint. We believe this is the only tenable attitude with the condition that reasonable discretion be exercised in certain areas, which restrictions are imposed by the present unsettled world situation and only in so far as the national security is involved.

I submit that we have no need to search for a guide for The Chemist

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and His Country for we can refer to the Constitution and By-Laws of THE AMERICAN INSTITUTE OF CHEMISTS, INC., which states in Article 1, Section 2:

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Dr. Nolan B. Sommer, M.A.I.C.

*Supervisor, New Product Development, American Cyanamid Company,
30 Rockefeller Plaza, New York, N.Y.*

(Remarks of the Chairman of Concurrent Session A, "Recent Progress,"
at the AIC Annual Meeting, May 7, 1952.)

SINCE it would be virtually impossible to consider the entire, huge industry, chemicals, even to hit only the high spots, in the space of one afternoon, we have selected five fields: Pharmaceuticals, Foods, Agricultural Chemicals, Plastics, and Textile Chemicals, for discussion.

The chemical industry is a dynamic one. It is what our financial friends commonly refer to as a "growth industry." It has, in fact, exhibited a steeper growth curve than any other major industry in the United States during the last twenty-five years. From 1940 to 1950, twenty-five major companies showed an average growth of about 250 per cent. In terms of annual sales volume, the industry had by 1950 reached an estimated total of \$6-billion. In that same decade, it more than doubled its plant investment, and there is no end in sight. This growth was accomplished on prices averaging only about 25 percent above the 1940 levels—a feat achieved by technical efficiency coupled with huge research and development expenditures, by sound management and by sheer volume of production.

The chemical industry is its own

best customer. Diversification seems to be inherent in the business. One company rarely competes with another all down the line. More often, there will be competition in one area and a healthy supplier-customer relationship in another. Our industry is not depression-proof, but because of its broad base and firm footing it does have a resiliency beyond that of most other businesses.

The last ten years has seen the spectacular growth in the organic field, with even the older inorganics experiencing greater expansion than most other manufacturing. It has seen petroleum emerge as a really major source of many chemicals. It has seen chemical stocks on the Exchange soar to third place in market value—just behind utilities and the oils. It has seen small chemical companies spring up and thrive vigorously and large companies grow larger—to the point where they are one day accused of stifling competition, and the next, are asked to carry out tasks which only bigness could accomplish.

As you read the papers of this Session, the stories of the new 'wonder drugs', of the new methods of

conditioning our soil, and of advances in food processing, you may well develop a comfortable feeling of self-satisfaction and accomplishment. We hope this is not the case. While much ground has been gained, it is only a beginning. Most of these fields are yet in their infancy—there is still no cure for cancer, we are still not able to make a sizeable part of the land in these United States productive, and we are indeed having difficulty in our attempts to sell some people the idea of improving food-stuffs through the use of chemical additives.

The industry of which we are a part will continue to grow and to be in the forefront of the nation's business. Every phase of it will make still greater advances. The people who make up these various segments are justly proud of their achievements and of their plans for the future—they are able and eager to chart their progress. Let us hear what they have to say.

Doubled Production: Of Silica Gel planned by the Culligan Zeolite Company at its expanded plant in San Bernardino, Calif.

Plant Site: Purchased by Heyden Chemical Corporation, New York, comprising sixty acres of land adjacent to the Houston Ship Channel, Houston, Texas, on which will be erected a methanol plant.

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Guggenheim Grant: Awarded to Ralph Mayer, F.A.I.C., member of the faculty of Columbia University, artist and paint chemist, to study the methods, materials and techniques of painting.

Combination: Sharples Chemicals, Inc., with the Pennsylvania Salt Manufacturing Company, through an exchange of common stock. George B. Beitzel, Pennsalt president, stated that Sharples will continue to operate, for the present, as a separate unit of Pennsalt.

Appointed: by The Commonwealth Engineering Co. of Ohio, Dayton, Dr. Leo J. Novak as chief of the Biological Laboratory Division. He was formerly technical director of Ethicon Suture Laboratories, Chicago.

Employed: As chemist at Freeman Chemical Company, 6512 E. Palmer, Detroit, Mich., Miss Charlotte Jane Sloan, AIC student medalist for 1952.

Recent Progress in Pharmaceuticals

Dr. Charles J. Kern, M.A.I.C.

Assistant to the President, Wyeth, Inc., 1401 Walnut St., Phila. 2, Pa.
(Presented at the AIC Annual Meeting, May 7, 1952, as part of Concurrent Session A)

I WOULD like to trace briefly some of the advances in medicine and pharmaceuticals which have recently caused the insurance companies to revise drastically their life expectancy tables.

The infectious diseases, until about twenty years ago, ranked high on the list of human killers. In 1930, the list of those diseases for which no specific cure existed included pneumonia, septicemia, rheumatic fever and tuberculosis. The advent of the sulfonamides and antibiotics has exerted a profound change in this picture. Today the degenerative diseases occupy first place as causes of death.

The first widely used sulfonamides—sulfanilamide and sulfathiazole—were effective in the treatment of the various diseases caused by staphylococcus, streptococcus and pneumococcus organisms, but unfortunately they were attended by undesirable side effects, such as crystalluria, skin-rash, and cyanosis. Intensive research in this field soon led to the development of other compounds characterized by greater safety. These compounds include sulfadiazine, sulfamerazine, sulfamethazine, sulfabenzamide, sulfacetimide, and more recently, sulfisoxazole and sulfa-

dimetine (Elkosin). The solubility of these latter compounds is much greater than that of the older sulfanilamide and consequently, the danger of crystalluria is greatly reduced. An interesting observation by Lehr, namely that sulfonamides exhibit independent solubilities in solution, has resulted in products combining two or more sulfonamides, thus greatly increasing the total solubility of the mixture. At pH values below 6.2, the solubility of these mixtures, plus their acetylated derivatives, is higher than that of the so-called soluble single sulfonamides plus acetylated derivatives.

The sulfonamides, despite the advent of the antibiotics, are enjoying an increasingly wide use because of relative inexpensiveness and the fact that certain strains of organisms which have become penicillin fast can be expected to yield to sulfonamide therapy.

Closely related to the sulfonamides, in a therapeutic sense, are the antibiotics. These latter compounds extend and broaden the spectrum of organisms which are amenable to treatment. Probably no chapter in the history of the drug industry is quite as spectacular as that unfolded

in the development of the antibiotics. The roll-call of names is constantly being expanded and, to mention but a few, now includes penicillin, streptomycin, Chloromycetin, Aureomycin, Terramycin, neomycin, bacitracin and polymyxin.

Antibiotics

It is little more than ten years ago since the first patient was successfully treated with penicillin. In that decade, what amounts to a revolution in medicine has taken place; we have entered an antibiotic age. To penicillin there have been added four other antibiotics of major importance. Some of the most deadly infections of mankind have been mastered and countless lives saved.

After ten years, penicillin still remains the most generally useful and least toxic of all the antibiotics and continues to be the drug of choice in the treatment of pneumonia, streptococcus infections, syphilis, anthrax and gonorrhea. Last year's production amounted to over 500,000 pounds, or approximately 350 trillion units—a staggering amount when compared to that produced by the original culture flask methods of preparation.

Research in the field of penicillin salts has continued through the years. Sensitivity to penicillin is a recognized hazard in its use. Two recent penicillin compounds have been marketed which are claimed to yield a lower incidence of sensitization in

susceptible individuals than potassium or procaine penicillin G. These compounds are Copenamine (N-methyl-1,2 diphenyl-2-hydroxyethylamine) penicillin and penicillin O (allylmercaptomethyl penicillin).

In the first example, the penicillin molecule has been left unaltered, whereas in the second, the benzyl group of the penicillin molecule has been replaced with an allylmercaptomethyl group.

Attempts have also been made over the years to secure a penicillin salt capable of yielding prolonged blood levels following injection. This objective appears to have been achieved in a recently evaluated salt, dibenzylethylenediamine dipenicillin G. Preliminary evaluation leads to the conclusion that a single injection is capable of yielding demonstrable blood levels for as long as fifteen days, as compared to 4-6 hours for the potassium salt, and 48-72 hours for the procaine derivative. The implications of this discovery for both prophylactic and therapeutic use are indeed startling; though still requiring much additional clinical evaluation. Incidentally, the compound is tasteless and stable in aqueous suspension, thus affording an ideal oral liquid dosage form.

The second major antibiotic, streptomycin, though having a fairly wide antibacterial spectrum, is largely confined to the treatment of tuberculosis, urinary tract infections and tularemia by the parenteral route, and of

intestinal tract infections by oral route. When used for extended periods, it may cause deafness and is prone to produce resistant strains of the tubercule bacilli. Until very recently, a combination of para-aminosalicylic acid and dihydrostreptomycin has been used to partially circumvent this occurrence. At present, a new drug, isonicotinic acid hydrazide, is being used experimentally and gives great promise of being an effective tuberculostatic agent.

The three other widely used antibiotics, all discovered since 1947, are Aureomycin, Terramycin and Chloromycetin. Each of them is effective against a broad spectrum of organisms, including gram positive and gram negative bacteria, as well as Rickettsia. All three have relatively low toxicity and can be given most readily by mouth.

Polymyxin, neomycin, and bacitracin constitute a group of antibiotics used for more specialized treatment, usually by topical application.

Antibiotic production has contributed greatly to the growth of the pharmaceutical industry during recent years. It is estimated that more than \$200 million in capital investment had been expended by 1951, while annual production was valued in excess of \$300 million. The first production of penicillin was sold for approximately \$20 per 100,000 units, which did not cover production costs.

Today's price is less than ten cents—and is going down!

Other Fields

Progress in fields other than the antibiotics has also been rapid. Anticoagulant research has resulted in the introduction of oral ethyl biscoumacetate (Tromexan). This compound gives a more rapid onset of action and faster return to normal blood clotting time than does the older dicumarol. Synthetic substitutes for heparin, including a polymannuronic acid derivative, are currently being investigated with encouraging preliminary results. These compounds, when used parenterally, are capable of exerting both an immediate and prolonged effect on blood clotting.

Cancer has shown no sign of succumbing to any drug, although much heartening work has been done. Nitrogen mustard therapy, as methyl bis (B-chloroethyl) amine hydrochloride, has been found to be of temporary benefit in the treatment of neoplastic diseases of the lymphoid and hematopoietic systems (Hodgkin's disease, lymphosarcoma and leukemia). Work continues with antimetabolites, enzymes and antiviral agents.

The introduction of additional antihistaminics during recent years has tapered off. However, during 1951, Phenergan N(2'-dimethylamino-2'-methyl) ethyl phenothiazine, was introduced on the American market. This drug is characterized by

an extremely long duration of effect; a single dose of 25 mg. at bedtime often is sufficient to give relief from hayfever, allergic rhinitis or urticaria for 18 to 24 hours.

Arthritis continues to offer a challenge as concerns causes and cure; however, the introduction of cortisone and ACTH marks a new era in the treatment of this disease. The synthesis and subsequent large scale production of cortisone (compound E) represents an alliance of research and engineering at its best.

The Afflictions of Age

With advancing age comes an increase in cardiovascular disease and hypertension. Congestive heart failure is now treated with newer mercurial diuretics such as mercaptopimerin sodium, along with cardiotonic digitalis derivatives. An interesting application of ion exchange resins has been the use of these compounds for sodium ion removal, thus allowing the patient a more palatable diet through the less restricted use of sodium chloride. The hexamethonium compounds: bromide, chloride, bitartrate have received recent publicity as agents for the treatment of hypertension. They work well in selected cases when used parenterally, but unfortunately, are marked by great variations in response when given orally. Apresoline R (1-hydrazinophthalazine)₂ is also used for the treatment of hypertension, both alone

and in combination with the hexamethonium compounds. It would appear that despite the unquestioned effectiveness of these compounds in lowering blood pressure, the search for safer compounds will continue.

Arterio and atherosclerosis have long offered an unsolved problem. Dr. Gofman's work at the University of California has offered the interesting speculation that the determining factor in the incidence of these diseases is the molecular size of the cholesterol-containing complexes, rather than the absolute blood cholesterol levels. A multitude of agents are presently being screened by the ultracentrifuge technique. At the present time, choline and/or inositol are prescribed for prophylaxis, their use being based on data obtained by other methods.

Coronary occlusion, with resultant shock, has long presented a problem in treatment. Two Cleveland physicians, Brofman and Hellerstein, recently demonstrated a marked advance in this field through the use of a pressor amine, methylphenyl tertiary butylamine. They found that adequate pressor response, without myocardial stimulation, followed the use of this drug as contrasted to direct myocardial stimulation when adrenalin was used. Furthermore, the dosage could be increased at will for further pressor response without the occurrence of undesirable side effects.

Plasma Substitutes

World War II proved the need for large quantities of plasma or plasma substitutes. Despeciated bovine plasma had been tried as a plasma substitute with variable results. Germany had developed and used in thousands of her soldiers a synthetic polymer, polyvinyl pyrrolidone, more commonly referred to as PVP.

Investigations in this country confirm the fact that it is an adequate substitute in emergency but does not fill all requirements of an ideal product. More recently, a number of American firms have developed a clinically satisfactory polysaccharide blood substitute called Dextran. It is secured through the action of a number of the leuconostoc group on a molasses or sugar medium. Both PVP and Dextran show satisfactory retention in the blood vessels and are therefore useful as plasma volume extenders.

Enzymes

The adaptation of enzymes (other than those of the digestive system) to pharmaceutical preparations is a recent development. Hyaluronidase, streptodornase, streptokinase and cytochrome C are now commercially available. Hyaluronidase is enjoying an increasingly wide use, not only in hypodermoclysis, but also in the treatment of sprains, hematomas and, surprisingly, kidney stones. The enzyme acts on the ground substance (mucopolysaccharide) and causes the

depolymerization and subsequent appearance in the urine of hyaluronic acid. The latter, in turn, results in an alteration of the colloidal characteristics of the urine, with a consequent reduced tendency to precipitate solids.

Streptodornase and streptokinase are finding use in the debridement of wounds. The former appears to be similar in nature to desoxyribonuclease, while the latter acts on a fibrin substrate, so that the combination results in a lysing action on both fibrin and pus.

Vitamins

The late 1930's marked a period of rapid advancement in the synthesis of various members of the B-complex, ascorbic acid and Vitamin D. However, the shark and tuna continued to be the main sources of Vitamin A. Within the last few years, such strides have been made in the synthesis and production of this vitamin, that the synthetic material now ranks first in pharmaceutical use. Equally rapid has been the growth in production facilities for the elaboration of Vitamin B₁₂. Little more than three years ago, only microgram quantities of this vitamin were available. The discovery that B₁₂ was apparently identical in action with liver injection for the treatment of pernicious anemia was quickly followed by the finding that the vitamin resulted in more rapid weight gain when given to animals. Peculiarly, B₁₂ is elaborated by the

same organism used for the production of streptomycin and further, combinations of B12 with any of various antibiotics give even more rapid weight gains in animals than can be achieved by either alone.

Ulcer Treatments

No discussion of pharmaceuticals would be complete without examining recent advances in the treatment of that bane of the harried executive — peptic ulcer. Treatment of ulcer by means of acid neutralization and pepsin inactivation continues to be effectively accomplished by means of alumina gel, though ion exchange resins have recently been advocated for this purpose. The synthesis of a compound which would act as a chemical sympathectomy by selectively blocking vagal impulse has been a long-sought objective. Recently, two such compounds claiming to have achieved this goal were marketed. The first, Methantheline bromide (Xanthene-A-carboxylate metho bromide) is stated to inhibit the action of acetyl chlorine in the ganglions of autonomic, sympathetic and parasympathetic systems and in the post-parasympathetic ganglionic nerve endings. The second compound, diphenmethanil methyl sulfate, is stated to have a selective anticholinergic action, thus achieving maximum inhibition of acid secretion with minimal atropine-like side effects.

Sleeping pills containing no barbiturates, hormones with little viril-

izing effect, and muscle relaxants without curare, are included in the long list of recent new drugs.

Now, lest all of the above give the impression that medicine has reached the push-button stage, I would like to quote the following, taken from a recent article by Dr. Holman:

Thoughts of an Obstetrician

The modern doctor is able to use a hypodermic syringe for the administration of an antibiotic or an endocrine substance with the celerity, dexterity, precision and facile skill of a French fencing master, but is unwilling or disinclined to determine its indication.

Too often, fever indicates administration of an antibiotic such as penicillin, Aureomycin, or streptomycin, instead of a search for the cause of the hyperpyrexia.

Too often, bleeding during pregnancy calls for large doses of stilbestrol or progestin or some other magic drug instead of a search for the source of bleeding, such as an erosion, cervical polyp or vaginal varicosity.

Too often does metrorrhagia, menorrhagia or amenorrhea call for injections of various endocrine substances, instead of indicating a search for the underlying alteration in physiology, or the pathology change which is the cause.

Frequently these therapeutic gyrations are about the same value as are the futile antics of a midjet caught in a revolving door. We are approaching the age of pushplunger medicine—and that is bad.

From "Thoughts of an Obstetrician,"
Albert W. Holman, M.D.
West. J. Surg., August 1951

Other Progress

I have dwelt at some length on recent progress in pharmaceuticals as concerns new drugs and new therapy. Equally important has been industry's recent progress in personnel

selection, application of statistical quality control procedures, an awareness of health as a matter of international concern and of the importance of pharmaceuticals in achieving and maintaining health.

In conclusion, a few words are in order on the subject of unfinished business. Cancer continues to be a menace for which no cure has yet been discovered. Influenza repeatedly demonstrates its capacity to appear in new and virulent forms, against which the present vaccines are not effective. The common cold remains the number one cause of industrial absenteeism, and our children still contract measles, chicken pox, and

mumps with monotonous regularity. Recent advances in poliomyelitis research give cause for optimism, but an effective preventive or cure is not yet available. Fungus infections in man and animals take a heavy yearly toll, and the diseases of the aged present an ever more pressing problem as the percentage of such individuals in our population continues to increase. And even the germs are getting smarter. They are learning to live in the presence of their former deadly enemies so that still newer and more effective antibiotics must be sought. We need not fear the lack of further worlds to conquer in this never-ending quest for better drugs.

Recent Progress in Foods

John H. Nair, F.A.I.C.

Assistant Director of Research, Thomas J. Lipton, Inc., Hoboken, N. J.

(An abstract of a paper presented at the AIC Annual Meeting, May 7, 1952, as part of Concurrent Session A. The complete paper will appear in *Food Engineering*.)

A NOTEWORTHY trend in the field of food manufacture in recent years is the rapid expansion in the number and variety of food products which can be quickly prepared in the home. Economic conditions which promote a high employment level have attracted additional millions of the country's homemakers to industry, greatly decreasing the time they have available for meal preparation. High family incomes make the potential economy of complete preparation of food dishes in

the home of lesser importance than quickness and convenience, factors offered by the new food specialties.

This demand for easily prepared products has accounted for many new developments in the techniques of food processing. Among these are discussed such operations as low temperature concentration of fruit juice, HT-ST pasteurization of liquids, radiation applications for sterilization, thawing, and combination treatments of heat and radiation, introduction of low methoxy pectin for

jam and jelly making and the numberless variety of dry mixes.

Equally important in the consideration of progress in the field of foods is the development of our understanding of their nutritional aspects. To our earlier knowledge of the necessity of proteins, fats and carbohydrates, together with accessory substances, in the diet, there was added in the thirties a new understanding of amino acid chemistry and its importance in nutrition. More recently, further studies of the vitamins and their linkage with enzymes helped to clarify and better define the principles of nutrition. Just now nutrition research is concerned with the mechanism of the intermediary metabolism of food components.

It is now recognized that there is

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an interdependence of problems involving the different components of diet which require a reorientation of viewpoint. From such studies of the interplay of the various materials in nutrition may arise knowledge which will provide means whereby degenerative diseases such as athero-sclerosis, cardio-vascular and hypertension conditions and rheumatoid arthritis may be better controlled.

Recent Progress

Dr. E. E. McSweeney

Battelle Memorial Institute, Columbus 1, Ohio

(An abstract of a paper presented at the AIC Annual Meeting, May 7, 1952, as part of Concurrent Session A.)

RECENT progress in plastics has been largely in the direction of increasing production of most materials, especially polystyrene, phenolics, polyvinyl chloride, and polyethylene. In recent months, this increasing production, coupled with a softening of the consumer market, has actually brought supply in excess of demand, with polyethylene remaining the notable exception.

Of the newer resins, the epoxys (essentially bisphenol-epichlorohydrin condensates) are reaching sizeable production because of increasing usage in such diverse fields as coatings, adhesives, potting compounds, prosthetics, and stabilizers for chlorine-containing resins. Fluorine resins (polytetrafluoro- and polytrifluoro-chloroethylene) are likewise finding many uses, although their relatively

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high price still limits application to specialties. Another new material, triallyl cyanurate, has greatly extended the use of polyester resins by enhancing their heat resistance. Rubber—phenolic blends, a rather new combination of old materials, are also finding wide acceptance.

On the application side, polyesters have received considerable attention for such diverse uses as assault boats, tie plates for railroad rails, and core-boxes and drier plates for foundry use.

Another foundry application which bears careful watching is the use of phenolic resins in the shell-molding process. Extensive production trials are being made, and a major new use for phenolics appears very close.

Larger and larger injection moldings is the striking trend in the fabrication industry. Sixty-ounce injection presses are becoming common, while 200- and 300-ounce machines are no longer rarities. With these giants, 12-pound moldings have been

made experimentally, while 7½-pound refrigerator door interiors are in production.

Synthetic fibers, of course, continue to expand and will account for an increasing percentage of resin usage.

Opportunities

Doris Eager, M.A.I.C.

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Inspectors: \$4205.00 per annum, plus travel allowances of \$5.00 to \$7.00 per day. Four years experience required though one year of college training may be substituted for one year of experience up to two years. (1) Inspector, chemical. (2) Inspector, paper and plastics. (3) Inspector, miscellaneous items. Request Form 57, or report for personal interview to Mr. Lynch, Civilian Personnel Office, N. Y. Quartermaster Procurement Agency, 111 East 16th St., New York, N. Y.

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Chemists Available

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Organic Chemist: M.A. 1952. Top scholastic record. AIC Student Medal. Married, 28, veteran. Administrative ability. Desires permanent position in organic, synthetic or analytical or physical organic work with advancement opportunities. Prefers Philadelphia or nearby areas. Box 68, THE CHEMIST.

Reprinted: The editorial, "What to Do at Meetings," by Dr. John R. Bowman, F.A.I.C. (April 1952, THE CHEMIST), in the May 1952 issue of THE CERAMIST publication of the Pittsburgh Section of the American Ceramic Society.

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Report of the Editor

THE CHEMIST was able to publish more than the usual number of pages this year, because of an increase in advertising and subscriptions, which reached the highest point in the twenty-nine years of its publication. Even so, we were unable to publish much interesting material promptly. AIC members can assist THE CHEMIST, not only by continuing to supply notable professional articles, but by calling the attention of qualified advertisers to its value as a medium for advertising and by purchasing from those who advertise. AIC members represent

REPORT OF THE EDITOR . . .

a group with exceptionally high buying-power, as is indicated by the following classifications:

Management Personnel (includes executives and corporate officials)	601
Production Personnel (includes plant superintendents and production officials)	197
Engineering Personnel	88
Research Personnel (includes directors of research and chief chemists)	925
Other (includes those in affiliated industries, chemical sales and purchasing, professors, instructors, consultants, and others)	704

The above classification does not include over 1000 subscribers who are not members of the AIC.

Guest editorials, written by AIC councilors and others, have been exceptionally well-received. Some have been reprinted in other publications. At the beginning of this year, to find out if a special type of editorial was preferred by the AIC membership, the Chapters were asked to select what they considered to be the best editorial during 1949 and 1950. In the order of choice, the following editorials were mentioned: "Professionalism," by C. P. Neidig; "How Can the Chemist Avoid Obsolescence", Dr. R. E. Kirk; "Thoughts for Chemists Seeking Employment," H. A. Levey; "Responsibility and Control," Dr. W. P. Cohoe, and "The Education of a Chemist," Dr. R. E. Kirk. Several Chapters did not make a choice. Some of the comments are worth recording here:

"The Chicago Chapter has found all of the editorials of sufficient interest to make an exact choice impractical. The varied subjects appealed strongly to the interests of various members and no one editorial received a decisive prominence for that reason. This indicates a general excellence and interest in all of them to the Chapter taken as a whole."

"Some (editorials) are very timely and all are interesting worthwhile reading."

"The majority of the Niagara Chapter feels that all speakers should be given a chance to say their bit in order that we can get from such a variety a better perspective of the entire field."

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"The membership of the Louisiana Chapter believes that editorials on "Professionalism" are the most desirable. The reason is that the basic idea of the AIC is to establish the chemist as a professional man."

Articles in *THE CHEMIST* during this year have covered many facets of the professional side of chemistry and have aroused much interest. We are always glad to receive letters discussing articles, editorials, or other material, by which the contributor may add thought or ideas of his own to round out the material presented. Good articles on professional subjects are always welcome. A wealth of interesting, original, and valuable information is still unrevealed about the professional aspects of chemistry. News items are also desired. Through the co-operation of the readers, *THE CHEMIST* can be made of increased value to every chemist.

May we express our deep appreciation to President Flett and the other officers of the *INSTITUTE* for their cooperation; to the members of the National Council, the Editorial Advisory Board, the Contributing editors, the Department editors, the Chapters, and to all who have contributed articles, reviews, news items, letters, suggestions, advertising or other materials.

—Vera F. Kimball, Editor

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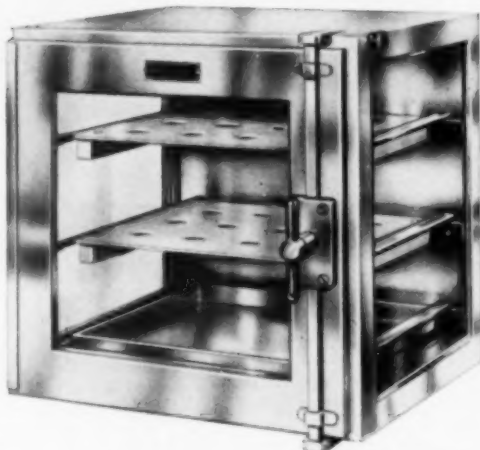
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To show the overall efficiency of the automobile in terms of the net useful work of locomotion produced, it is necessary to start with crude petroleum in the ground. Of the initial energy of the crude, 16.5 per cent is used in production and refining; another 2.5 per cent is required in transporting the gasoline, and another 64.0 per cent is dissipated in operating the automobile engine with its auxiliaries, such as fan, lights, heater, and radio. The remaining 16.7 per cent, according to Eugene Ayres and Charles A. Scarlott, goes into work expanded in actual locomotion, overcoming friction in the transmission and rear axle and in tire deformation, and wind resistance. If the motor fuel were made from coal or gas instead of crude oil, this

energy system efficiency would drop even farther. The automotive engineer is constantly seeking ways to increase this performance.

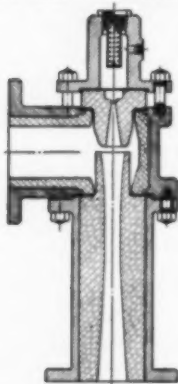
—Arthur D. Little, Inc.

More than \$370,000 in scholarships, fellowships, and educational grants for 1952-53 will be made by General Electric Co.

Myler, a new film developed by Du Pont, is claimed to have unusual strength, heat resistance, and electrical insulating properties. It is similar in appearance to cellophane but its properties appear to make it suitable where cellophane and other commercial films are not adaptable.

Isonicotinic acid hydrazide, the new antituberculosis drug, is to be produced, according to Dr. John McKeen, F.A.I.C., of Chas. Pfizer and Co., at the rate of 100,000,000 tablets per month by the end of 1952, if demand warrants.

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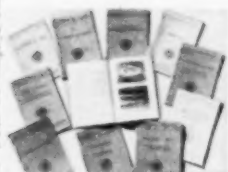
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